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ABSTRACT

A model describing the cognitive processes in which a child must engage in order to respond competently in social situations is presented in this document as the framework for several series of studies dealing with provocation by peers. A major tenet of the model is that in order to perform competently in a social situation the child must first process cues in an orderly fashion. According to the model, children come to a particular social situation or task with a data base (their memory store) and a set of programmed directives (goals), and they receive as input from the environment a set of social cues. Their behavioral response to those cues occurs as a function of their progression through several cognitive steps. Each sequential step is a necessary but insufficient part of competent responding. Effective or competent behavior occurs only following the successful completion of all steps. A series of studies is described which investigate this model of social cognitive processing as it applies to boys' aggressive behavior. Results indicate that aggressive boys are more likely than nonaggressive boys to interpret a peer as hostile and to act in hostile ways. Furthermore, selective recall of hostile cues is a significant predictor, or mediator, of an interpretation of peer hostility. (Author/JA)

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Social Competence and Aggressive Behavior in Children

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Social Competence and Aggressive Behavior in Children

In spite of our vast study of children's cognitive development and our equally vast study of children's social behavior, it is only recently that we psychologists have come to study the relation between one's cognitive processes and one's social behavior (see Shantz, 1975).

Clinical researchers have been at the forefront of this movement, particularly when they have studied the role of various social cognitive skill deficits in children's deviant behavior. For example, Spivack and his colleagues (Spivack, Platt, and Shure, 1976; Spivack and Shure, 1974) have demonstrated that the cognitive skill of generating many and varied solutions to interpersonal problems is related to behavioral deviance in children as young as four years of age (Shure, Spivack, and Jaeger, 1971). Also, Chandler (1973; Chandler, Greenspan, and Barenboim, 1974) has found that children who are deficient in cognitive skills of role-taking are likely to engage in high rates of aggression and that training these children in role-taking skills could reduce the frequency of their aggressive behavior. Likewise, Camp (1977) has shown that aggressive behavior often occurs as a consequence of the child's failure to act cognitively.

In spite of the promise provided by these studies, a number of significant problems still confront this field. The most glaring problem is that the relation between cognition and behavior has been a weak one; that is, most studies of cognitive skills have accounted for only small portions of the variance in behavior. Perhaps one reason for this weak finding is that researchers have studied skills one at a time, as if <u>one</u> skill, such as role-taking, could and should explain <u>all</u> deviant behavior. A related problem has been that some researchers have assumed generalizability

of their constructs across tasks and situations. This assumption is often not warranted (Mischel, 1968). An aggressive child does not behave aggressively on all occasions, just as a child's level of cognitive skills in perspective-taking varies across tasks (Fisher, 1980; Ford, 1979). Clearly, assessment of the relation between cognitive skills and social behavior must occur within situations. The opposite assumption has also been a problem. If each behavior is so specific as to be tied to a single cue, as in a conditioned response, then it may be useless for clinicians and researchers to search for intervention programs that could significantly alter children's behavior across settings. A middle ground must be reached. Finally, and most importantly, research in this area has progressed in the absence of a comprehensive theory of how, and in what manner, cognitive process may be related to competent and deviant social behavior.

My recent studies of the role of social attributions in children's aggressive behavior (Dodge, 1980; Dodge, Note 1; Dodge and Newman, in press) have led me to formulate a framework for the development of such a comprehensive theory. The framework is a social information processing model of social competence, and is based on Flavell's (1968; 1973) theory of cognitive development, Goldfried and d'Zurilla's (1969) model of problem solving, and McFall's (in press; McFall and Dodge, 1981) formulation of social skills. A major tenet of the model is that in order to perform competently in a social situation the child must first process cues in an orderly fashion. Failure to do so will increase the probability that the child will perform incompetently, or will engage in deviant behavior. According to the model (see Figure 1), a child comes to a particular social situation or task with a data base (his memory store) and a set of programmed directives (goals), and she receives as input from the environment a set of

social cues. That child's behavioral response to those cues occurs as a function of her progression through several cognitive steps. Each step is a necessary, but insufficient part of competent responding. The steps are sequential in time, meaning that competent responding requires an orderly progression of cognitive steps. Effective or competent behavior occurs only following the successful completion of all steps.

As shown in the figure, the first step is a decoding process. The child must accurately receive social cues from the environment through sensory processes and then perceive them. Relevant to this step of the process is the child's ability to search the environment for cues and to focus on, or attend to, appropriate cues. For example, in competently responding to a provocation by a peer, such as being hit in the back, the child must search for cues relevant to the peer's intention in committing the act, and then focus on those cues. This step is therefore an active process requiring skill.

The second step is an interpretation process. Once the child has perceived the cues in the situation, she must integrate them with her memory of past events and her goals for the task. She then searches for possible interpretations of the social cues. The child who was hit by a peer must decide whether the peer was trying to be friendly or mean, or was acting accidentally. Finally, the child matches the environmental data and her memory with a programmed rule structure. For example, her rule might be: if the peer laughs after hitting me, then I know he meant to hurt me.

The third step is the response search process. Once the child has interpreted a situation, she must search for possible behavioral responses. Certainly the work of Spivack and Shure has demonstrated the importance of

being able to generate many and varied responses, or solutions, to situations. These skills are relevant to this step of the response process. Also important at this step is the child's application of response rules. For example, the child might acquire the following rule: if a peer intends to hurt me, then I can hit him back. Of course, Piaget (1965) suggested that young children first acquire a different rule: if I get hurt, then I can hit back.

Beyond generating many responses, the child must begin to choose an optimal response, which takes place at the next step. In choosing a response, the child must first assess the probable consequences of each response that she has generated so that she can evaluate the adequacy of each response possibility. These skills require highly complex cognitive representations and may be a great source of difficulty for young children, or children who don't delay gratification. At some point, however, the child decides on an optimal behavioral response.

Finally, and this is no small task, the child must proceed to act out the chosen behavioral response. This step is an encoding process. Motoric skills, acquired over time through practice, are critical here. The child who decides to respond to a peer's provocation with a verbal statement of displeasure and a request to stop the provocation must possess the verbal skills to accomplish this behavioral task.

The process does not stop there (see Figure 2). Following the encoding of a response, the child must monitor the effects of her behavior. By attending to the cues of others, and by monitoring her own behavior, the child can learn to regulate her behavioral response, just as a ship's captain uses nautical readings to steer his vessel along a charted course. Of course, this process involves a new data base, different environmental

cues, and perhaps a change of goals. The child must repeat the five step responding process over and over in order to sustain a competent performance over time.

In articulating this model, I have made several assumptions. First, I have assumed that responding at each step occurs at lightning speed, and of course at a nonconscious level. In no way does the child "think" about these steps. They just occur. In this way, responding is similar to the concept of automatic information processing posited by Shiffrin (Shiffrin and Schnieder, 1977). Second, I have assumed that competent social behavior is highly situation specific and attentive to environmental cues. In fact, failure to attend to cues could lead to deviant behavior. I assume that each social situation may be viewed as a task. Competently responding to provocation is a task, just as is successfully initiating play with a peer or cooperatively taking turns in a game. The next assumption is that performance at these tasks may be judged to be competent or incompetent, and that competence is a function of skilled performance at each of the five steps proposed. Finally, I assume that skills at each step can be assessed independently. For example, one can assess response search skills by holding the previous steps constant, that is, by explicitly giving a child an interpretation of a situation and asking her for possible responses. Also, one can assess encoding skills by asking a child to act out a particular response decision.

This last assumption has guided several empirical studies that I have completed. Each of these studies has been an attempt to understand the role of social cognitive processing in boys' aggressive behavior. In the first study (Richard and Dodge, 1981), we held the decoding and interpretation steps constant by presenting boys with hypothetical problem situations, most of them involving peer conflicts. We then asked the boys to generate potential

responses, or solutions, to each situation, and from these responses, we tried to predict each boy's status as aggressive or nonaggressive in peer conflict situations. We were highly successful. Boys who typically behaved aggressively in those situations generated fewer responses than did the nonaggressive boys. We then assessed the competence and sequencing of our boys' responses, to see how they adjusted to the problem situation if their first response met with an unsuccessful outcome. Those data are presented in the next slide (see Figure 3). As shown in that slide, the initial response offered by both groups of boys was most often judged to be a competent response by independent raters. The effectiveness of subsequent responses varied with status, however. The aggressive boys continued to generate a high proportion of competent responses, whereas when the nonaggressive boys did offer a second or third response, they began to deteriorate in the quality of those responses. This suggested that the response search skills of aggressive boys are deficient, both in the quantity of their responses and in the quality of their later responses. But in order to understand the behavioral differences between aggressive and nonaggressive boys, one must look at the sequence of responses that a boy generates and one must look at the responses over time, that is, following the failure of a first response.

Next, we held the response search step of the process constant and assessed boys' response evaluation skills. We did this by presenting our aggressive and nonaggressive boys with several of the response possibilities that had been named in the response generation study. We asked the boys to evaluate the effectiveness of each response and to tell us which response they would choose. In spite of using several procedures to assess these evaluation skills, we were not able to find any differences between the

aggressive and nonaggressive boys. It may be that aggressive boys lack the skills necessary to generate competent behavioral responses, but when offered a competent response, they are able to recognize it.

In the next series of studies, we were interested in more than the mere articulation of skill deficiencies in aggressive boys. We wanted to explore the relations among the various steps of the proposed model, so that we could examine the cognitive processes by which aggressive behavior in a provocation situation comes about. We started by looking at the progression from a social provocation cue, to the interpretation of the cue made by a child, and on to the behavioral response displayed by the child. Previous studies (Rule, Nesdale, and McAra, 1974; Darley, Klossen, and Zanna, 1978) had suggested that when a provocation cue is committed with hostile intention, children tend to respond with retaliatory aggression, whereas when the provocation is committed benignly. as in an accident, children refrain from retaliation. In the first study (Dodge, 1980), we wanted to see if this relationship held both for aggressive boys and for nonaggressive boys. We did this by bringing our subjects to the laboratory and having them engage in a puzzle-making task in which they tried to win a prize for their performance. Midway through the task, we instructed a second child, a confederate, to destroy the subject's puzzle by knocking it to the ground. In one third of the cases, the confederate displayed cues indicating that the provocation was accidental. In another third, he displayed cues indicating that he had committed the provocation on purpose and with hostile intention. Since frequently these cues are not clearly given, we also had a third condition, in which the confederate committed the provocation without displaying any cues. This was an ambiguous provocation condition. We videotaped and coded the subject's behavioral response to the provocation, and derived a behavioral aggression score. This score served as the dependent variable.

The results are displayed in the next slide (see Table 1). As shown in that slide, both aggressive and nonaggressive boys attended to the clearly displayed intention cues of the peer. That is, when the provocation was hostile or negative, both groups of subjects retaliated with aggression toward the peer. When the provocation was benign and the cues were positive, neither group retaliated. When the provocation was ambiguous, however, the groups diverged. The aggressive boys responded as if the peer had been hostile, that is, with aggression. The nonaggressive boys responded as if the peer had acted benignly, that is, by refraining from aggression. These data suggested that the behavioral differences between the groups may have occurred as a function of differences in the interpretations made concerning the ambiguous provocation.

In the next study, we wanted to test these hypotheses more directly. First, we wanted to see whether or not aggressive and nonaggressive boys differ in their interpretations of ambiguous provocation situations. Second, we wanted to see whether or not one's interpretation of this situation is a predictor of the behavioral response one generates for the situation. We answered these questions by presenting our subjects, aggressive and nonaggressive boys, with hypothetical situations in which they were to imagine that they experienced a negative outcome, such as getting hit in the back with a ball by a peer. We worded the story so that the peer had seemed to act ambiguously. We asked our subjects two questions: 1) do you think the peer probably acted in a hostile way, or do you think the event was an accident? and, 2) what would you do in response to this event?

The results are found in the next slide (see Table 2). First, the aggressive group of boys responded that the peer had acted with hostile

intention 50% more frequently than did the nonaggressive group. It is apparent that the interpretations of situations by aggressive boys are more hostile than those by nonaggressive boys. Clearly, aggressive boys are biased toward attributing hostile intentions to peers in this situation. Second, it is clear that, even in an ambiguous situation, the type of interpretation that one makes will strongly influence the type of response that one generates.

Up to this point, we have talked about the links between the interpretation one makes of a situation and one's subsequent behavioral responses. It is apparent that boys who make hostile misinterpretations are likely to generate retaliatory aggressive responses, and that aggressive boys are more likely than nonaggresisve boys to make hostile interpretations. The next question we asked was: how does a hostile misinterpretation come about? That is, what are the cognitive processes that contribute to the attributional bias that is displayed in aggressive boys? We turned to the model, which suggested that a misinterpretation at step 2 could be a function of inadequate processing at step 1, the decoding stage, or it could be a function of biased expectancies based on one's previous experience. These expectancies would be present in the memory store.

In the next series of studies (Dodge, 1981; Dodge and Newman, 1981), we tested the hypothesis that deficits in decoding could mediate a hostile misinterpretation. In one study, we looked at the child's social cue searching process. Based on work in information processing (Hochberg, 1970), we hypothesized that if aggressive boys do indeed expect hostility from peers, they may be primed or "perceptually ready" to perceive hostility. If this is the case, they should search for fewer cues than other boys do,

prior to making an interpretation of the situation. When they do not search the environment adequately, they should make a hostile misinterpretation.

To test this hypothesis, aggressive and nonaggressive boys were asked to participate in a detective game, in which they had to search for clues that would help them decide whether or not a hypothetical peer had committed a hostile act. The clues were presented in the form of audiorecorded statements made by other peers about the suspect. These statements contained information that either helped implicate or helped absolve the suspect. For example, in one game, the peer suspect was accused of pushing down an old lady, and one of the clues was a statement made by a second peer who said he saw the suspect standing near the lady's house the previous day. In half of the experimental conditions, most of the statements implicated the suspect, and in the other half, the statements tended to absolve the suspect. Of course, we controlled the order in which statements were presented. The subject's task was to gather as many clues as he wanted until he could reach a decision about whether or not the peer had committed the act. He could win a prize if he made a "correct" decision. Each time the subject wanted information, he heard a set of audiorecorded statements. After each set, he was asked if he wanted to make a decision or to hear more information. This pattern continued until he finally made a decision. In this way, we collected information about how long each subject would search prior to making an interpretation, and, of course, about the decision that he made.

The results were true to our hypotheses. As shown in the next slide, (see Table 3), aggressive boys searched <u>less</u> prior to making a decision about the peer suspect than did nonaggressive boys. That is, they listened to 40% fewer pieces of information. Next, we looked at the relation between search time and the decisions made by the subjects. We did this by dividing

our subject groups into high searching and low searching subgroups, based on a within cell median split on their search. We then performed an analysis of variance in decisions. These data are presented in the next slide (see Table 4). As shown there, a bias toward making misinterpretations of hostility was displayed only by the low searching, or quick responding, aggressive boys. None of the control groups displayed such a bias. That is, the high searching aggressive boys did not demonstrate errors in interpretation, and neither did the nonaggressive groups. These data clearly show that inadequate search of social cues during the decoding process contributes to mistakes in the interpretation process made by some aggressive boys.

In another study, we held the amount of cue search in which a child could engage constant, so that we could look at the relation between a child's focus of cue search and his interpretations about peers. We reasoned that aggressive boys may be making biased interpretations about peers as a function of selective attention to only the hostile cues in their social environment. We tested this hypothesis by presenting aggressive and nonaggressive boys videotaped stimuli of peers making a number of statements during the course of an interview. The stimuli were prepared by boy actors that we had recruited. During each interview, the actor made 9 statements about acts in which he had supposedly engaged. Of these, 3 were hostile, 3 were neutral, and 3 were benevolent. Of course, the statements were presented in a variety of counterbalanced orders. After the subject viewed an interview, he was asked to recall as many of the statements as possible. Following the recall, he was asked to make interpretations about the actor's past and future behavior and intentions.

This procedure allowed us to test the hypothesis that a child's

interpretations about a peer are made as a function of his selective attention to certain social cues during the decoding process. Consistent with previous studies, we found that aggressive boys indeed were more likely than nonaggressive boys to make the interpretation that a peer is hostile and will continue to act in hostile ways. Also, through multiple regression analyses, we found that selective recall of hostile cues is a significant predictor, or mediator, of an interpretation of peer hostility. In other words, the greatest likelihood of an interpretation of hostility occurred when an aggressive boy selectively attended to hostile cues.

Let me summarize these studies by articulating a cognitive model of aggressive behavior in boys (see Figure 4). According to the model, aggressive boys carry in their memory an expectancy that peers will be hostile toward them. When confronted with social cues from a peer, they engage in a decoding process. If during this process, an aggressive boy fails to search for all available cues, or if he selectively attends to only hostile cues from a peer, then the probability is greatest that he will make interpretations that the peer is hostile. When this occurs, he is highly likely to behave aggressively toward the peer. This behavior is then likely to lead to retaliatory aggression from the peer, which serves to reinforce the aggressive boy's original expectancy that peers are hostile. The model describes a vicious circle.

At this point, the data have led us to a hypothesis of clinical importance. Is it possible to interrupt the cycle by training aggressive boys in decoding skills, that is, by training them to attend to <u>all</u> social cues, including benevolent cues, and to decode more slowly and carefully? Perhaps then they will make fewer biased interpretations of peers and will become less likely to inappropriately respond to peers' social cues with

aggressive behavior. That is an empirical question, but one which we have not answered yet. That study is presently in progress.

The model that I have presented today describes the cognitive processes in which a child must engage in order to respond competently in social situations. I have applied the model to only one situation, that of provocations by peers. The model is far more general, however, and may serve as a framework for studying the relation between social information processing skills and social competence in many situations.

There are several implications of this model. The model suggests that competent social behavior is a function of several social information processing skills, and that deviant behavior occurs when the information processing breaks down, Since the break down could occur at any of a number of processing steps, skill at <u>all</u> steps must be assessed in order to detect the source of the break down. For researchers, this means that a multiple regression model, using measures of processing skill at <u>each</u> step, will be the best predictor of social competence within a particular situation. For clinicians, the model provides a framework in which to conduct assessments of situation specific skill deficiencies in socially incompetent children. These assessments will help clinicians decide which skills should be trained in a particular child.

Of course, the model is <u>just</u> a framework at this point, and not a comprehensive theory. But even so, it appears to have promising implications, for both researchers and clinicians.

Notes

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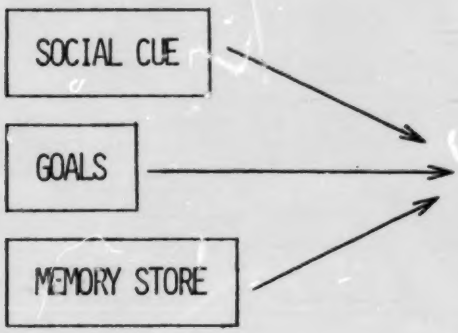
FIGURE 1

A SOCIAL INFORMATION PROCESSING MODEL OF COMPETENCE



1. DECODING PROCESS
   - A. PERCEPTION OF SOCIAL CUES
   - B. SEARCH FOR CUES
   - C. FOCUS (ATTENTION TO CUES)

2. INTERPRETATION PROCESS
   - A. INTEGRATION OF MEMORY STORE, GOALS, AND NEW DATA
   - B. SEARCH FOR INTERPRETATIONS
   - C. MATCH OF DATA TO PROGRAMMED RULE STRUCTURE

3. RESPONSE SEARCH PROCESS
   - A. SEARCH FOR RESPONSES
   - B. GENERATION OF POTENTIAL RESPONSES

4. RESPONSE DECISION PROCESS
   - A. ASSESSMENT OF CONSEQUENCES OF POTENTIAL RESPONSES
   - B. EVALUATION OF ADEQUACY OF POTENTIAL RESPONSES
   - C. DECISION OF OPTIMAL RESPONSE

5. ENCODING PROCESS
   - A. BEHAVIORAL REPERTOIRE SEARCH
   - B. EMISSION OF RESPONSE

FIGURE 2

SEQUENTIAL ASPECTS OF SOCIAL INFORMATION PROCESSING

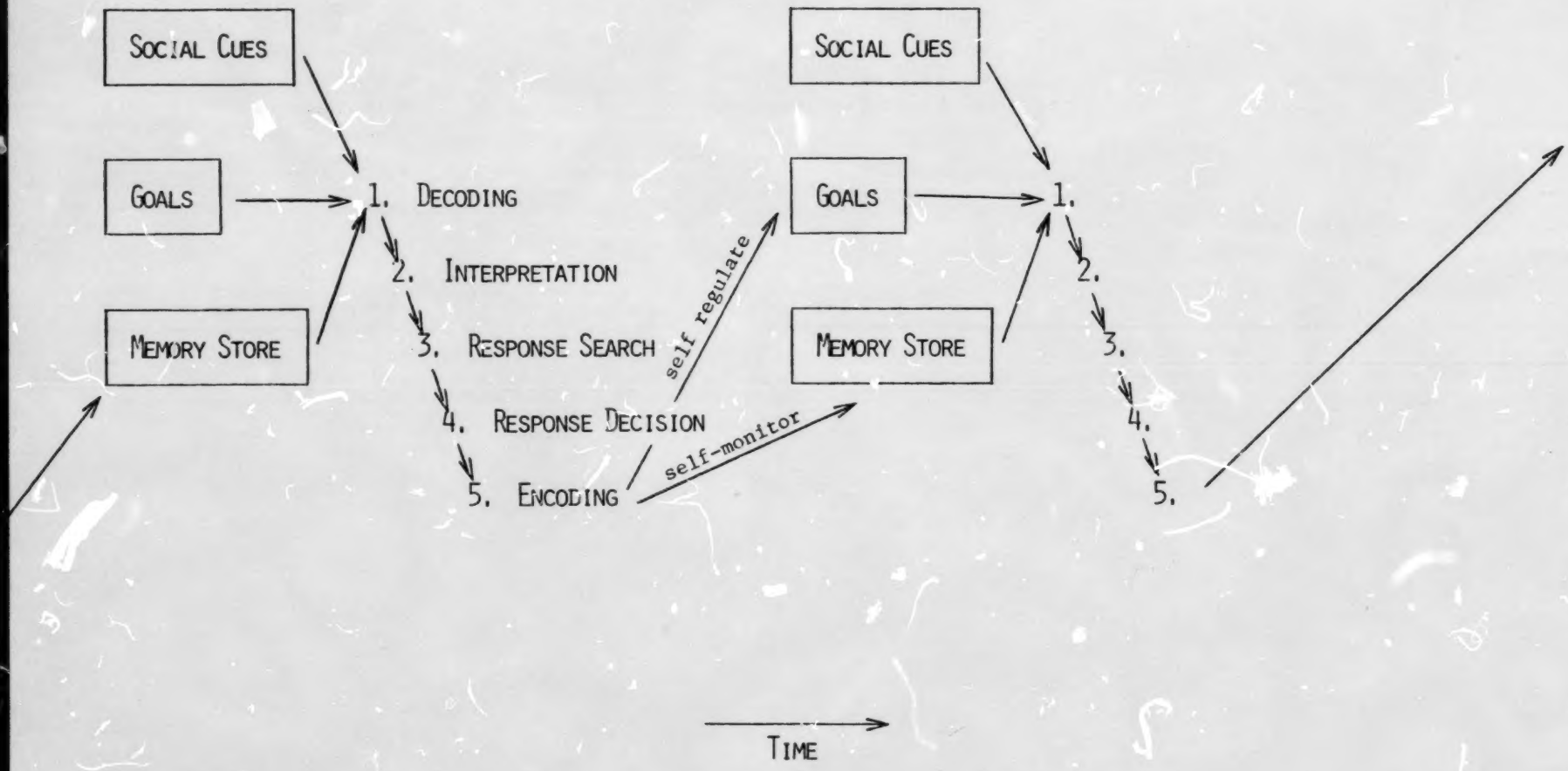


FIGURE 3

The Proportions of Subjects' Solutions Rated as Effective

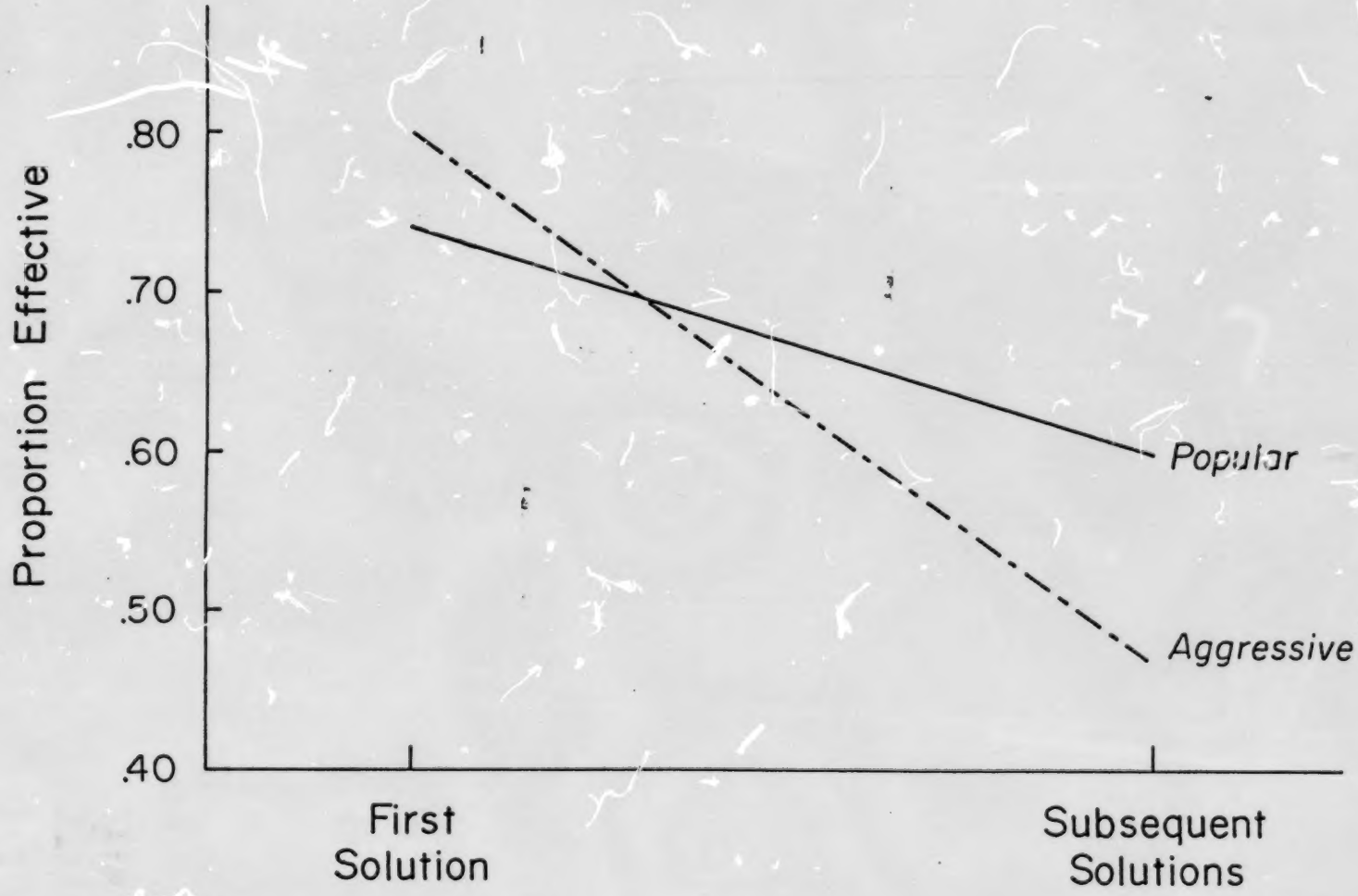


Table 1

MEAN BEHAVIORAL AGGRESSION SCORES, BY SUBJECT STATUS AND EXPERIMENTAL CONDITION[1]

	INTENTION CUES BY PEER		
	NEGATIVE	AMBIGUOUS	POSITIVE
AGGRESSIVE SUBJECTS	2.7 a	2.3 a	1.8 b
NONAGGRESSIVE SUBJECTS	2.5 a	1.5 b	1.7 b
TOTAL	2.6	1.9	1.8

[1]NEUMAN-KEULS TEST REVEALED THAT SCORES DESIGNATED AS "a" ARE NOT SIGNIFICANTLY DIFFERENT FROM EACH OTHER, BUT ARE SIGNIFICANTLY LESS THAN SCORES DESIGNATED AS "b," WHICH ARE NOT DIFFERENT FROM EACH OTHER ($p < .05$).

Table 2

Relation between the Interpretation Process and the Response Process in aggressive and Nonaggressive Boys: The Probability of an Aggressive Response

	Type of Interpretation	
	Benign	Hostile
Aggressive Boys (Probability of Hostile Interpretations = .25)	.28	.74
Nonaggressive Boys (Probability of Hostile Interpretations = .17)	.24	.55

TABLE 3

The Mean Number of Testimonies Requested Prior to Making a Decision of Guilt or Innocence

Grade Level	Aggressive	Nonaggressive
1	1.10	1.71
3	1.49	2.10
5	1.72	2.26

TABLE 4

The Percentages of Subjects Judging the Target to be Guilty When the Balance of Clues Favored Innocence

	Valence of Story	
	Positive	Negative
Aggressive Subjects		
Quick Responders		
Grade 3	37	77*
Grade 5	29	71*
Slow Responders		
Grade 3	33	50
Grade 5	25	37
Nonaggressive Subjects		
Quick Responders		
Grade 3	33	33
Grade 5	22	22
Slow Responders		
Grade 3	0	43
Grade 5	17	33

* This cell significantly differs from relevant comparison cells (Dunn's test, $p < .05$)

FIGURE 4

A Cognitive Model of Aggressive Behavior in Boys